



A new species of *Parapinnanema* (Nematoda, Chromadoridae) from Dr Theodor Mortensen's Pacific Expedition 1914–16 with an identification key to the genus

FEDERICA SEMPRUCCI^{1,3} & MARTIN V. SØRENSEN²

¹*Dipartimento di Scienze della Terra, della Vita e dell'Ambiente (DiSTeVA), Università di Urbino, loc. Crocicchia, 61029 Urbino, Italy. E-mail: federica.semprucci@uniurb.it*

²*Centre for GeoGenetics, Natural History Museum of Denmark, University of Copenhagen, Øster Voldgade 5-7, 1350 Copenhagen K, Denmark. E-mail: mvsorensen@snm.ku.dk*

³*Corresponding author*

Abstract

A new species from the family Chromadoridae is described from samples collected during Dr Mortensen's Pacific Expedition 1914–16 to Honolulu, Hawaii. *Parapinnanema hawaiiensis* sp. nov. is characterized by a low *c'* ratio and especially by a peculiar complex morphology of the median part of the gubernaculum. An updated and modified key to all the valid species of *Parapinnanema* is proposed.

Key words: Chromadorida, Euchromadorinae, Hawaii, taxonomy, marine nematodes

Introduction

The family Chromadoridae, generally marine and represented by about 410 species (Tchesunov 2014), has been recorded worldwide, and their abundance appears to be positively correlated with an increase in sediment grain size (Heip *et al.* 1985).

Chromadoridae are currently divided into five subfamilies: Chromadorinae, Euchromadorinae, Harpagonchinae, Hypodontolaiminae and Spilipherinae. Euchromadorinae accommodates 12 genera and more than 60 species (Tchesunov 2014). They are characterized by having a cuticle with a complex heterogeneous ornamentation, often with lateral differentiation. The six outer labial and four setiform cephalic sensilla may be arranged in a single circle. The amphideal transverse fovea is slit-like or oval, and located posterior to the cephalic setae. The buccal cavity is characterized by a large dorsal tooth, with or without denticles or smaller ventrosublateral teeth. The pharynx has or lacks a defined terminal bulb, and the gubernaculum is usually with hammer- or L-shaped lateral pieces (incorrectly indicated as formed from the cloacal lining, *i.e.* with the term telamon) (Decraemer & Smol, 2006). The precloacal supplements are missing, but a precloacal differentiation of the body cuticle may be present (Tchesunov 2014).

The genus *Parapinnanema* (sub-family: Euchromadorinae) was established by Inglis (1969) together with the genus *Austranema* Inglis, 1969, which Warwick & Coles (1975) subsequently synonymized with the first genus. This synonymization appears to be correct, since both genera have similar modifications of the lining of the oesophastome, lack an oesophageal bulb, and have a pronounced precloacal modification in the males. The distinction that *Parapinnanema* had two circles of six and four cephalic setae, whereas *Austranema* had a single circle of ten, cannot be maintained, since *A. pectinata* (Wieser & Hopper, 1967) and *A. colesi* (Inglis, 1968) both have two circles. Furthermore, the characteristic thickness of the battlement-like cuticle of *Parapinnanema* in the oesophageal region is clearly only a matter of the degree of cuticular thickness, since a slight thickening can be seen also in *Parapinnanema harveyi* Warwick & Coles, 1975 and other species.

Currently, *Parapinnanema* comprises 11 species (Gourbault & Vincx, 1994).

Among the unidentified material that was collected during Dr Mortensen's Pacific Expedition 1914–1916, and

References

- Allgén, C. (1947a) On some freeliving marine nematodes from Tobago (Br. W. I.) (Papers from Dr. Th. Mortensen's Pacific Expedition 1914–16). *Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening*, 110, 45–63.
- Allgén, C. (1947b) West American marine nematodes (Papers from Dr. Th. Mortensen's Pacific Expedition 1914–16). *Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening*, 110, 65–219.
- Allgén, C. (1951) Pacific freeliving marine nematodes. (Papers from Dr. Th. Mortensen's Pacific Expedition 1914–16). *Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening*, 113, 263–411.
- Belogurov, O.I., Belogurova, L.S. & Smollanko, O.I. (1985) Morphology of the free-living nematode *Parapinnanema imbricate* sp. n. (Nematoda: Chromadorida) from the sublittoral of Moneron Island. In: *Nentos Shelfa Ostrova Moneron*. Akademiia Nauk SSSR, Da l'Nevostochnyi Nauchnyi Tsentri, Institut Biologii Moria, Vladivostok, pp. 50–54.
- Chitwood, B.G. (1933) A revised classification of the Nematoda. *Journal of Parasitology*, 20, 131.
- Coles, J.W. (1965) A critical review of the marine genus *Euchromadora* de Man, 1886. *Bulletin of the British Museum (Natural History)*, Zoology, 12, 157–194.
- Decraemer, W. & Smol, N. (2006) Orders Chromadorida, Desmodorida and Desmoscolecida. In: Eyuaem Abebe, A., Traunspurger, W. & Andrassy, I. (Eds.), *Freshwater Nematodes: Ecology and Taxonomy*, CABI, Wallingford, pp. 497–573.
- Ditlevsen, H. (1922) Marine free-living nematodes from the Auckland and Campbell Islands. (Papers from Dr. Th. Mortensen's Pacific Expedition 1914–16). *Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening*, 73, 1–32.
- Ditlevsen, H. (1930) Marine free-living Nematodes from New Zealand. (Papers from Dr. Th. Mortensen's Pacific Expedition 1914–16). *Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening*, 87, 201–242.
- Filipjev, I. (1917) Un nématode libre nouveau de la mer Caspienne, *Chromadorissa* gen. nov. (Chromadoridae, Chromadorini). *Zoologicheskii Zhurnal*, 2, 24–30.
- Gerlach, S. & Riemann, F. (1973/1974) The Bremerhaven checklist of aquatic nematodes. *Veröffentlichungen des Instituts für Meeresforschung in Bremerhaven*, 4 (1/2), 734 pp.
- Gourbault, N. & Vincx, M. (1994) New species of *Parapinnanema* (Nematoda: Chromadoridae) are described, with a discussion of the genus. *Marine Freshwater Research*, 45, 141–159.
<http://dx.doi.org/10.1071/mf9940141>
- Grimaldi-De Zio, S. (1968) Confronto fra Nematodi del fango del coralligeno di piattaforma e una comunità del fango dello stesso distretto adriatico. *Italian Journal of Zoology*, 35, 347.
- Heip, C., Vincx, M. & Vranken, G. (1985) The ecology of marine nematodes. *Oceanography and Marine Biology. An Annual Review*, 23, 399–489.
- Inglis, W.G. (1968) Interstitial nematodes from St. Vincent's Bay, New Caledonia. In: *Expédition Française sur les récifs coralliens de la Nouvelle-Calédonie*, 2, pp. 29–74. [Editions de La Fondation Singer-Polignac, Paris,]
- Inglis, W.G. (1969) Convergence in the structure of the head and cuticle of *Euchromadora* species and apparently similar nematodes. *Bulletin of the British Museum (Natural History)*, Zoology 17, 149–204.
- Jensen, P. (1986) The nematode fauna in the sulphide-rich brine seep and adjacent bottoms of the east flower garden, NW Gulf of Mexico. I. Chromadorida. *Zoologica Scripta*, 14, 247–263.
<http://dx.doi.org/10.1111/j.1463-6409.1985.tb00195.x>
- Kreis, H. (1932) Freilebende marine Nematoden von den Sunda-Inseln II. Oncholaiminae. (Papers from Dr. Th. Mortensen's Pacific Expedition 1914–16). *Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening*, 93, 23–69.
- Murphy, D.G. (1965) The marine nematode genus *Nygmatonchus* Cobb, 1933 rediscovered, with the description of *N. alii*, new species. *Veröffentlichungen des Instituts für Meeresforschung in Bremerhaven*, 9, 204–209.
- Tchesunov, A. (2014) Order Chromadorida Chitwood, 1933. In: Schmidt-Rhaesa, A. (Ed.), *Handbook of Zoology, Gastrotricha, Cycloneuralia and Gnathifera*. De Gruyter, Berlin, pp. 467–486.
- Warwick, R. & Coles, J. (1975) Notes on the free-living marine genus *Euchromadora* de Man, 1886 and its allies, with description of two new species (Chromadoridae: Nematoda). *Journal of Natural History*, 9, 403–412.
<http://dx.doi.org/10.1080/00222937500770311>
- Wieser, W. & Hopper, B. (1967) Marine nematodes of the east of North America. I. Florida. *Bulletin of the Museum of Comparative Zoology at Harvard University*, 135, 239–344.